



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/591,595	07/20/2007	Shinichiro Haruyama	KAK-0023	3386
23353 7590 01/21/2010 RADER FISHMAN & GRAUER PLLC LION BUILDING 1233 20TH STREET N.W., SUITE 501 WASHINGTON, DC 20036			EXAMINER NGO, TANYA T	
			ART UNIT 2613	PAPER NUMBER
			MAIL DATE 01/21/2010	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/591,595

**Applicant(s)**

HARUYAMA ET AL.

**Examiner**

TANYA NGO

**Art Unit**

2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/DP)  
Paper No(s)/Mail Date 7/20/2007, 9/5/2006
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_

## DETAILED ACTION

### *Drawings*

1. Figures 12, 13, 14, and 15 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.34(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hartog UK Patent publication GB 2,246,487, Shigeji Japanese Patent Publication 2001-133652, and .

Re claim 1, Hartog discloses a communications system, comprising:

an optical fiber configured to transmit light (*Fig. 1 shows a fiber cable 2 which receives light from a light source 1, page 8, lines 13-17*); and

a receiving means for receiving light leaked from the side of the optical fiber so as to acquire data (*stations 8a-8n are placed along the fibers, pg. 8, lines 19-20, wherein the stations contains an optical detector 9 is placed in proximity to a side of exposed fiber, p.8, lines 21-24 and the sensitivity of the detectors is sufficient that they may detect signals using only side scatter light, pg. 3, lines 15-18*)

Hartog does not disclose wherein the optical fiber is a GI-type optical fiber having a core structured such that the refractive index at the center of the core is large, gradually decreasing according to position from the center to the periphery. However, Shigeji discloses wherein the optical fiber is a GI-type optical fiber (Shigeji discloses that the manufacturing of the leakage optical fiber contains a glass rod for the center cores 12 which has the same refractive index distribution as the core of GI-type optical fiber, paragraph [0020]) having a core structured such that the refractive index at the center of the core is large, gradually decreasing according to positions from the center to the periphery (the optical fiber contains center core 12, wherein the refractive index distribution is shown in drawing 1a such that at the core 12 contains the refractive index of 12a, thus, according to Fig. 1b, the refractive index of the center core is highest at the center and gradually decreased toward the periphery of the center core, paragraph [0017]). Hartog and Shigeji are analogous art because they are from the same field of endeavor, leaky optical fibers. At the time of the invention, it would have been obvious to one of ordinary skill in the art, having the teachings of Yoji and Shigeji before him or her, to modify the leaky optical fiber of Shigeji

to include the leaky optical fiber of Shigeji because to attain the incidence outgoing radiation of the lightwave signal from the optical fiber surface (paragraph [0042]).

Furthermore, Hartog does not disclose that the light being transmitted by the fiber was modulated according to data. However, Fee discloses that in optical data networks high speed data is modulated on light waves that are transmitted through the optical links of the data network. Hartog and Fee are analogous art because they are from the same field of endeavor, optical communication. At the time of the invention, it would have been obvious to one of ordinary skill in the art, having the teachings of Hartog and Fee before him or her, to modify the light of Hartog to include the characteristic of being modulated according to data of Fee because it allows for the light to transmit along with desirable data allow for communication.

Re claim 3, Hartog, Shigeji, and Fee disclose all the elements of claim 1, which claim 3 is dependent upon. Furthermore, Shigeji discloses wherein leakage light intensity and transmission distance are adjusted according to a relationship between refractive indices at a central part of the optical fiber and at peripheral parts thereof (*Shigeji discloses the creating of a leakage optical fiber which light is efficiently made incident on an emitted from through the surfaced by facilitating the leakage of the light by creating an optical fiber with varying refractive indices throughout the core of the fiber, Abstract. Therefore the amount of light leaked, or leakage light intensity, is changed due to the changing of the refractive indices within the core of the fiber. Furthermore, the transmission distance also changes due to a relationship between the refractive indices because the relationship between the refractive indices will adjust the*

*amount of light leaked from the fiber. The amount of light leaked from the fiber directly relates to the transmission distance because the more light leaked from the fiber, the shorter the transmission distance will be due to a reduced strength of the signal within the fiber).*

4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hartog, Shigeji and Fee as applied to claim 1 above, and further in view of Cassidy et al (herein Cassidy) US Patent 5,748,813.

Re claim 2, Hartog, Shigeji, and Fee disclose all the element of claim 1, which claim 2 is dependent upon. Hartog, Shigeji, and Fee do not explicitly disclose wherein the optical fiber has scatterers mixed therein. However, Cassidy discloses an optical communication that includes scattering means to incoherently scatter into free space light thus coupled out of the fiber (Col. 2, lines 15-16) wherein the scattering means comprises irregularities in the core of the fiber, such as small crystals within the fiber's core (Col 2, lines 43-46). Shigeji and Cassidy are analogous art because they are from the same field of endeavor, leaky optical fibers. At the time of the invention, it would have been obvious to one of ordinary skill in the art, having the teachings of Shigeji and Cassidy before him or her, to modify the optical fiber of Shigeji to include the scatters mixed into the core of Cassidy because the scattering means scatter light coupled out of the fiber, therefore increasing the leakage of light from the optical fiber.

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hartog, Shigeji, and Fee as applied to claim 1 above, and further in view of Yoji et al (herein Yoji) Japanese Patent Publication 2001-308798.

Re claim 4, Hartog, Shigeji, and Fee disclose all the elements of claim 1, which claim 4 is dependent upon. Hartog, Shigeji, and Fee do not disclose wherein the receiving means is provided in a mobile body, and the optical fiber does not move. However, Yoji discloses an optical system of a projector 4 or a light receiving device 5 is made into a side face leakage optical fiber 7(Abstract) wherein the light receiving device is further disclosed as the electric eyes by the specification and are attached to the carrying truck (¶ [0021]), which is a mobile body. Furthermore, the optical fiber is only placed along the extended along the running route of the carrying truck, but is not place on any mobile body. Horton and Yoji are analogous art because they are from the same field of endeavor, optical communication. At the time of the invention, it would have been obvious to one of ordinary skill in the art, having the teachings of Hartog and Yoji before him or her, to modify the optical communication system of Hartog to include the mobility of the receiver along the optical fibers stationary path of Yoji because it provides a low-cost optical data transmission equipment capable of reliably performing transmission and reception in optical data transmission between a mobile station traveling complicated routes and an earth station.

6. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hartog, Shigeji, and Fee as applied to claim 1 above, and further in view of Keiichi Japanese Patent Publication 05-281393.

Re claim 5, Hartog, Shigeji, and Fee disclose all the elements of claim 1, which claim 5 is dependent upon. Hartog, Shigeji, and Fee do not disclose wherein the optical fiber is provided in a mobile body, and the receiving means does not move. Keiichi discloses a mobile monitor device that uses a leak light axis fiber (§ [0015]) wherein the main part of the mobile monitor device contains the symbol of the TEMEBI camera which is converted to a lightwave signal and is inputted into a leak light axis fiber and is received by the distribution power board or a host computer (§ [0013]). Furthermore, the host computer 32 and the distribution power board 33 are not mobile and the main part 28 of the mobile device is (§[0018], Fig. 1). Hartog and Keiichi are analogous art because they are from the same field of endeavor, optical communications. At the time of the invention, it would have been obvious to one of ordinary skill in the art, having the teachings of Hartog, Shigeji, and Fee and Keiichi before him or her, to modify the communication system of Hartog, Shigeji, and Fee to include the mobile transmitter and stationary receiver of Keiichi because it allows for communication at an arbitrary point on the track.

7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shigeji Japanese Patent Publication 2001-133652 and Cassidy et al (herein Cassidy) US Patent 5,748,813.



Re claim 6, Shigeji discloses a leaky optical fiber having a core structured such that the refractive index at the center of the core is large, gradually decreasing according to positions from the center to the periphery (*the optical fiber contains center core 12, wherein the refractive index distribution is shown in drawing 1a such that at the core 12 contains the refractive index of 12a, thus, according to Fig. 1b, the refractive index of the center core is highest at the center and gradually decreased toward the periphery of the center core, paragraph [0017]*).

Shigeji does not appear to explicitly disclose scatters in the core of the fiber. However, Cassidy discloses an optical communication that includes scattering means to incoherently scatter into free space light thus coupled out of the fiber (Col. 2, lines 15-16) wherein the scattering means comprises irregularities in the core of the fiber, such as small crystals within the fiber's core (Col 2, lines 43-46). Shigeji and Cassidy are analogous art because they are from the same field of endeavor, leaky optical fibers. At the time of the invention, it would have been obvious to one of ordinary skill in the art, having the teachings of Shigeji and Cassidy before him or her, to modify the optical fiber of Shigeji to include the scatters mixed into the core of Cassidy because the scattering means scatter light coupled out of the fiber, therefore increasing the leakage of light from the optical fiber.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TANYA NGO whose telephone number is (571) 270-7488. The examiner can normally be reached on M - F from 9 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Vanderpuye can be reached on (571) 272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ngo/  
Jan. 15, 2010

/Kenneth N Vanderpuye/  
Supervisory Patent Examiner, Art Unit 2613